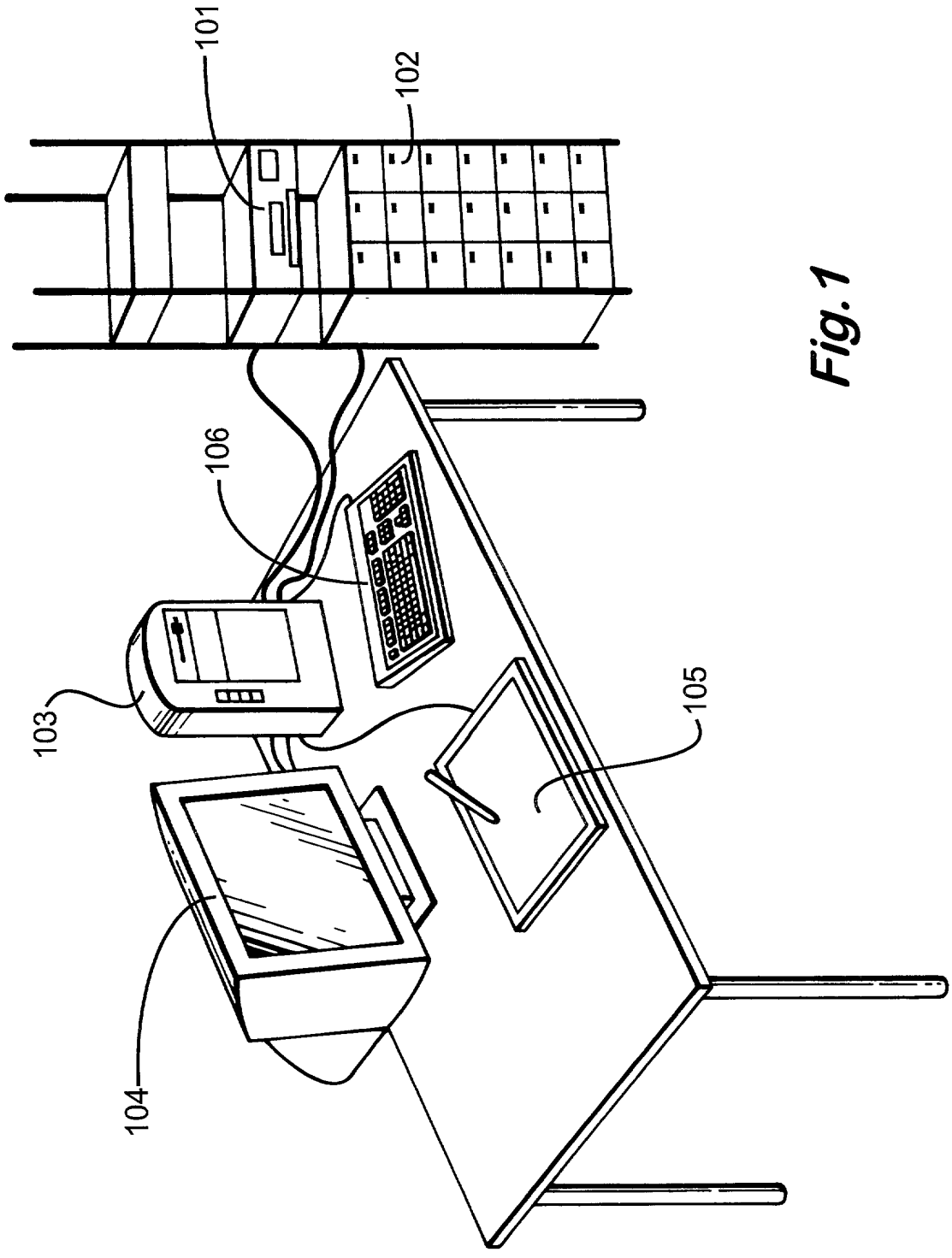



Fig.1

EP 0 602 269 A1 24 08 87 60

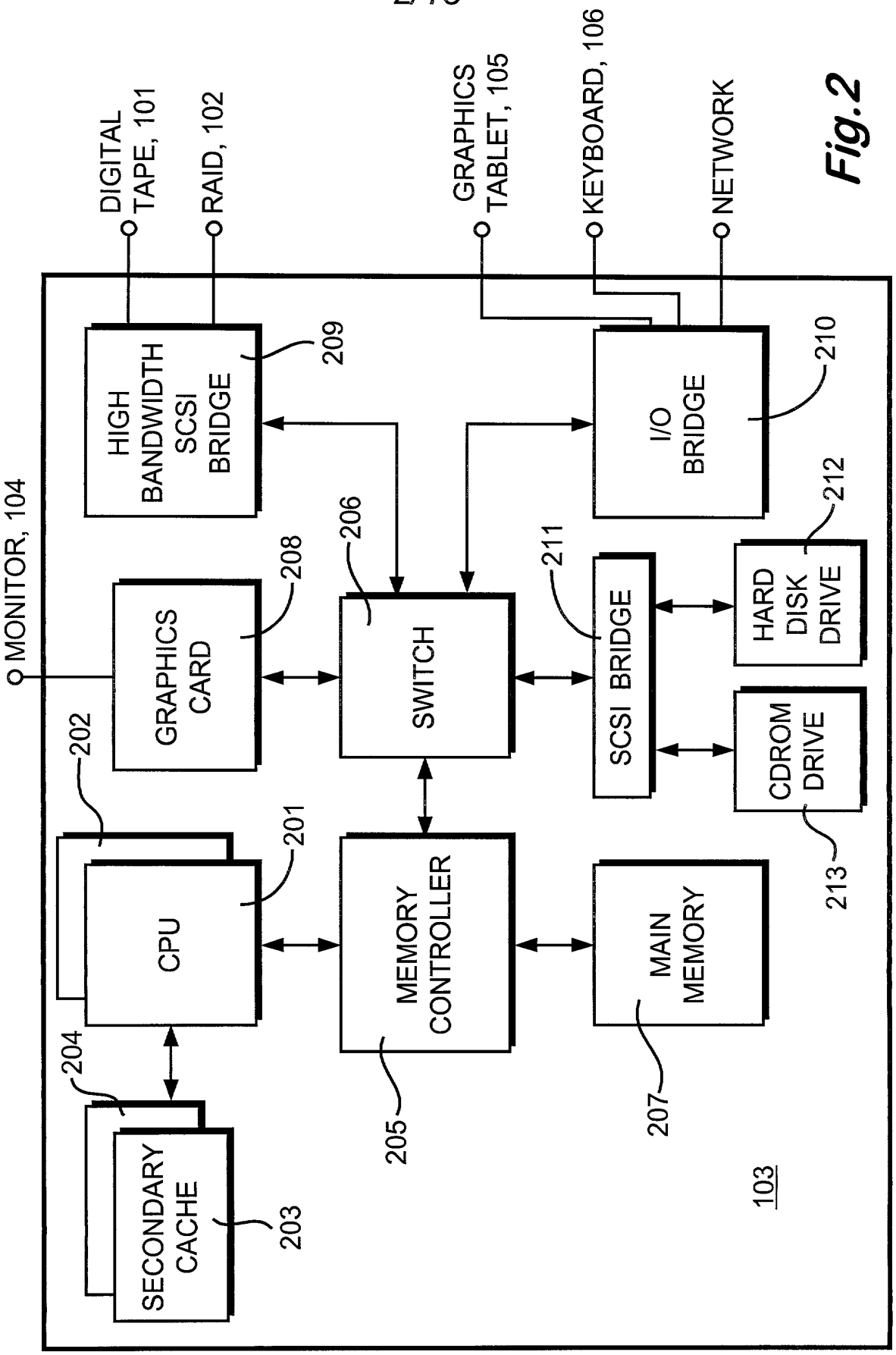

DIGITAL TAPE, 101
RAID, 102
GRAPHICS TABLET, 105
KEYBOARD, 106
NETWORK
MONITOR, 104
HIGH BANDWIDTH SCSI BRIDGE
209
I/O BRIDGE
210
GRAPHICS CARD
208
206
SWITCH
211
SCSI BRIDGE
212
HARD DISK DRIVE
CDROM DRIVE
213
202
CPU
201
MEMORY CONTROLLER
MAIN MEMORY
204
SECONDARY CACHE
203
205
207
103

Fig.2

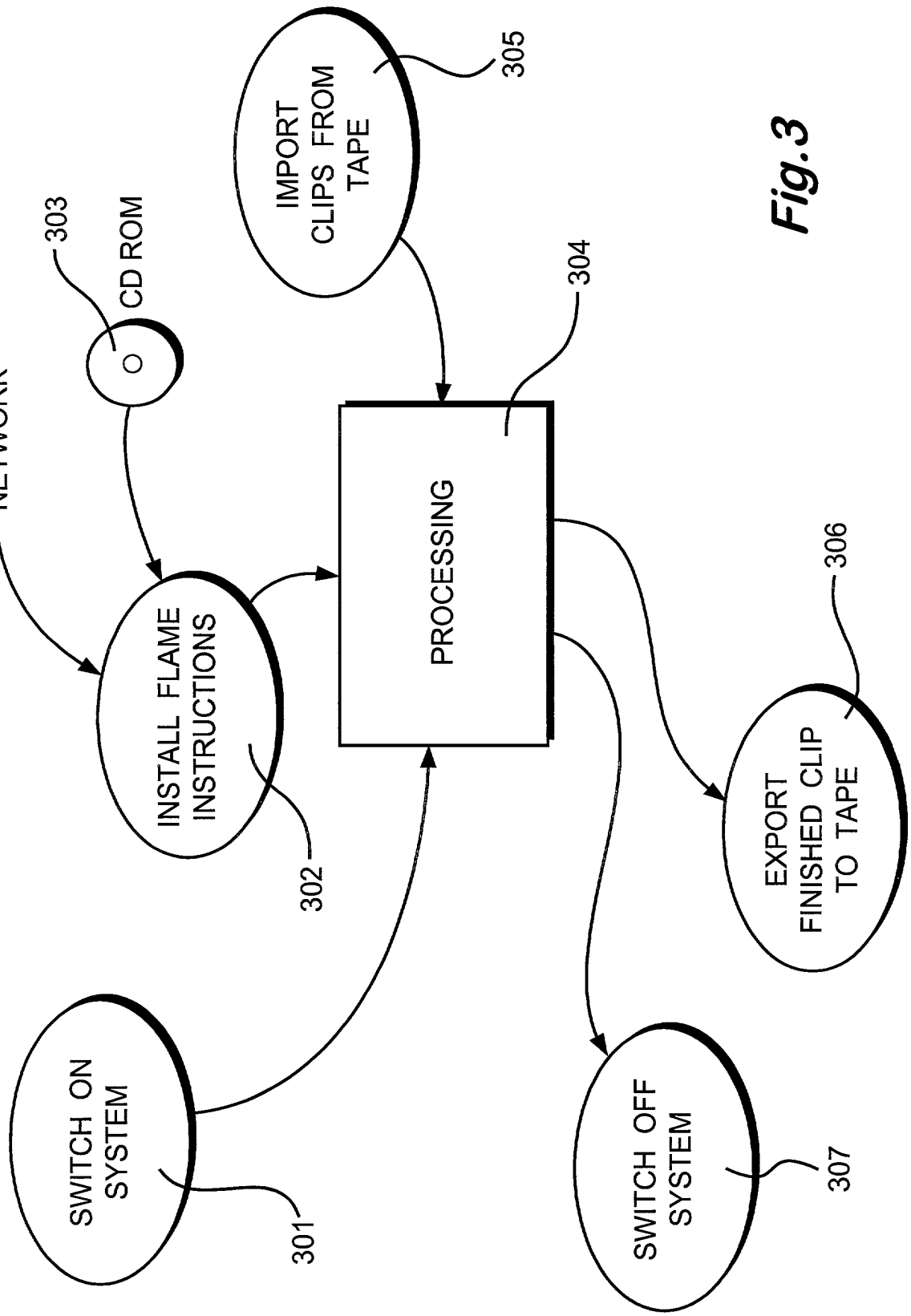

NETWORK
303
CD ROM
IMPORT CLIPS FROM TAPE
305
304
INSTALL FLAME INSTRUCTIONS
302
PROCESSING
306
EXPORT FINISHED CLIP TO TAPE
SWITCH ON SYSTEM
301
SWITCH OFF SYSTEM
307

*Fig.3*

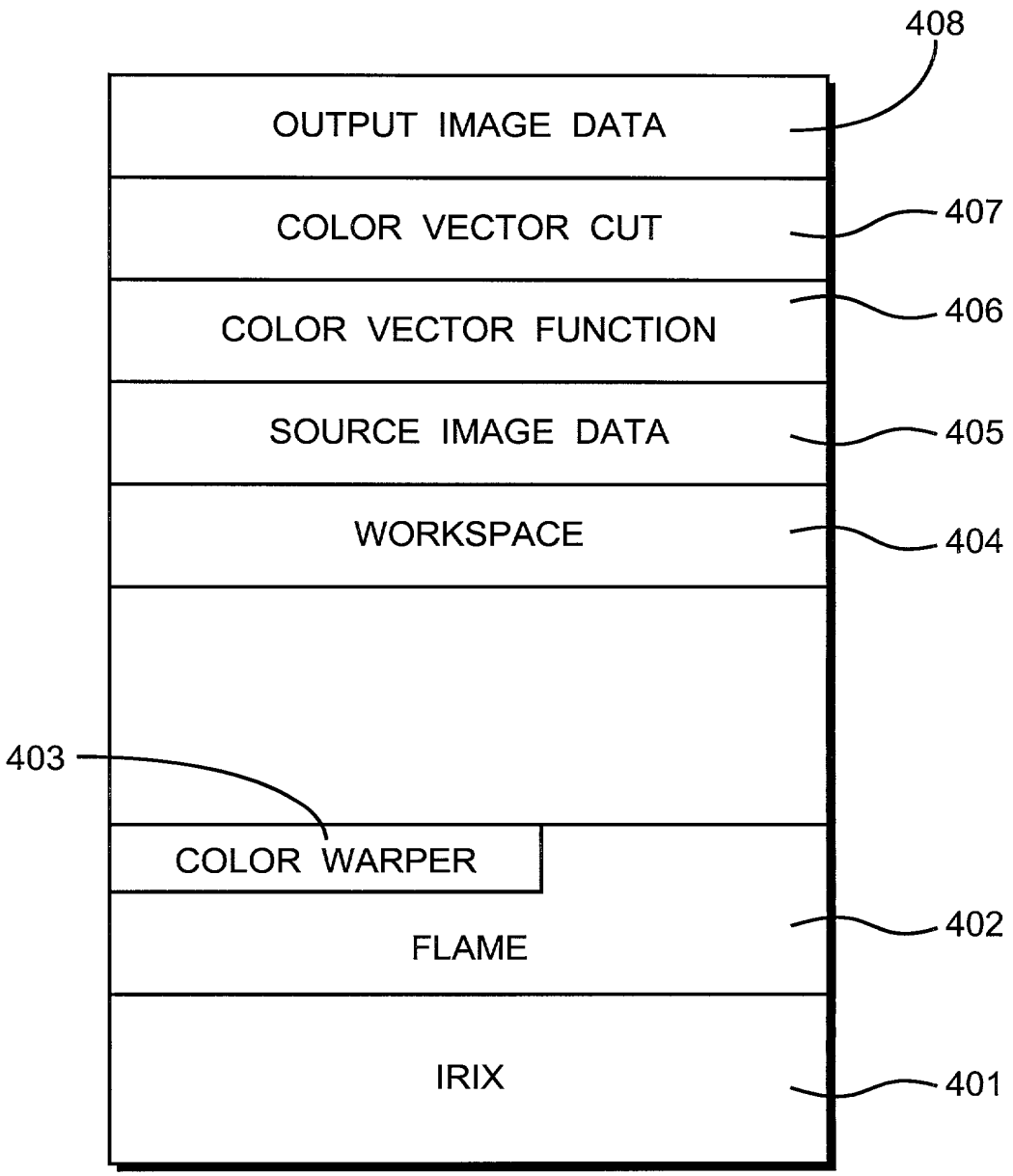

408
OUTPUT IMAGE DATA
COLOR VECTOR CUT
407
COLOR VECTOR FUNCTION
406
SOURCE IMAGE DATA
405
WORKSPACE
404
403
COLOR WARPER
FLAME
402
IRIX
401

*Fig.4*

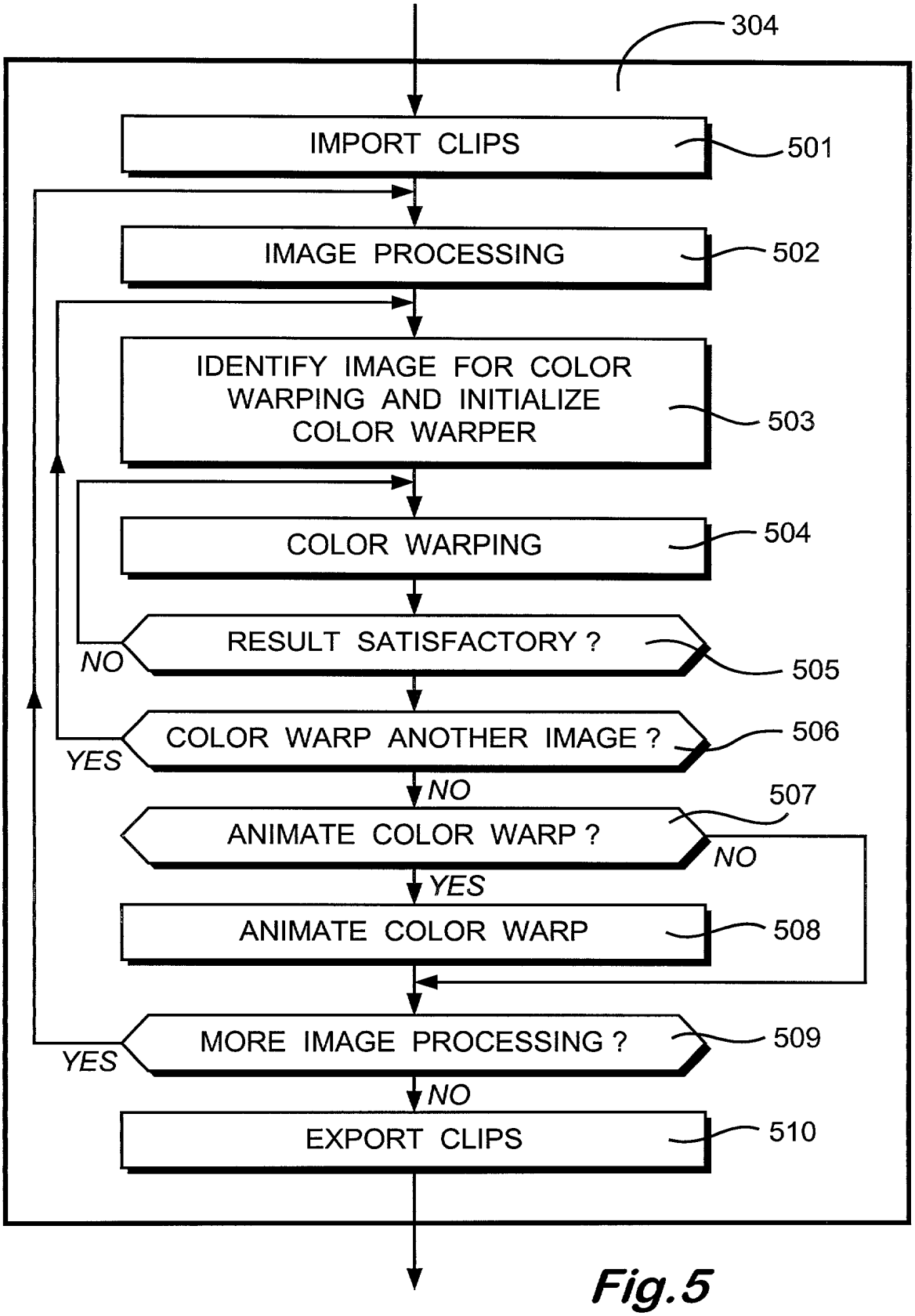

304
IMPORT CLIPS
501
IMAGE PROCESSING
502
IDENTIFY IMAGE FOR COLOR WARPING AND INITIALIZE COLOR WARPER
503
COLOR WARPING
504
RESULT SATISFACTORY ?
NO
505
COLOR WARP ANOTHER IMAGE ?
YES
506
NO
ANIMATE COLOR WARP ?
507
NO
YES
ANIMATE COLOR WARP
508
MORE IMAGE PROCESSING ?
YES
509
NO
EXPORT CLIPS
510

Fig.5

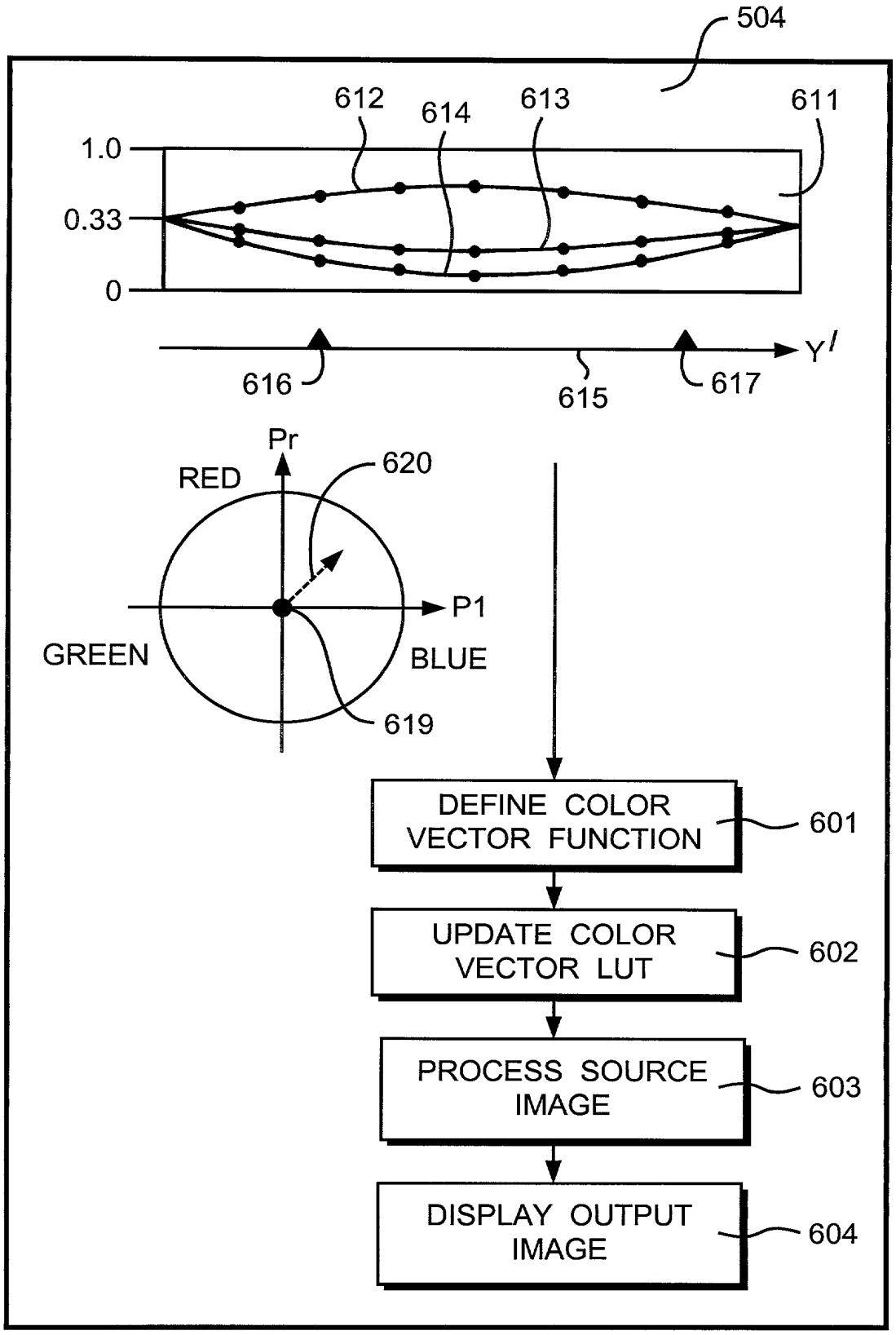
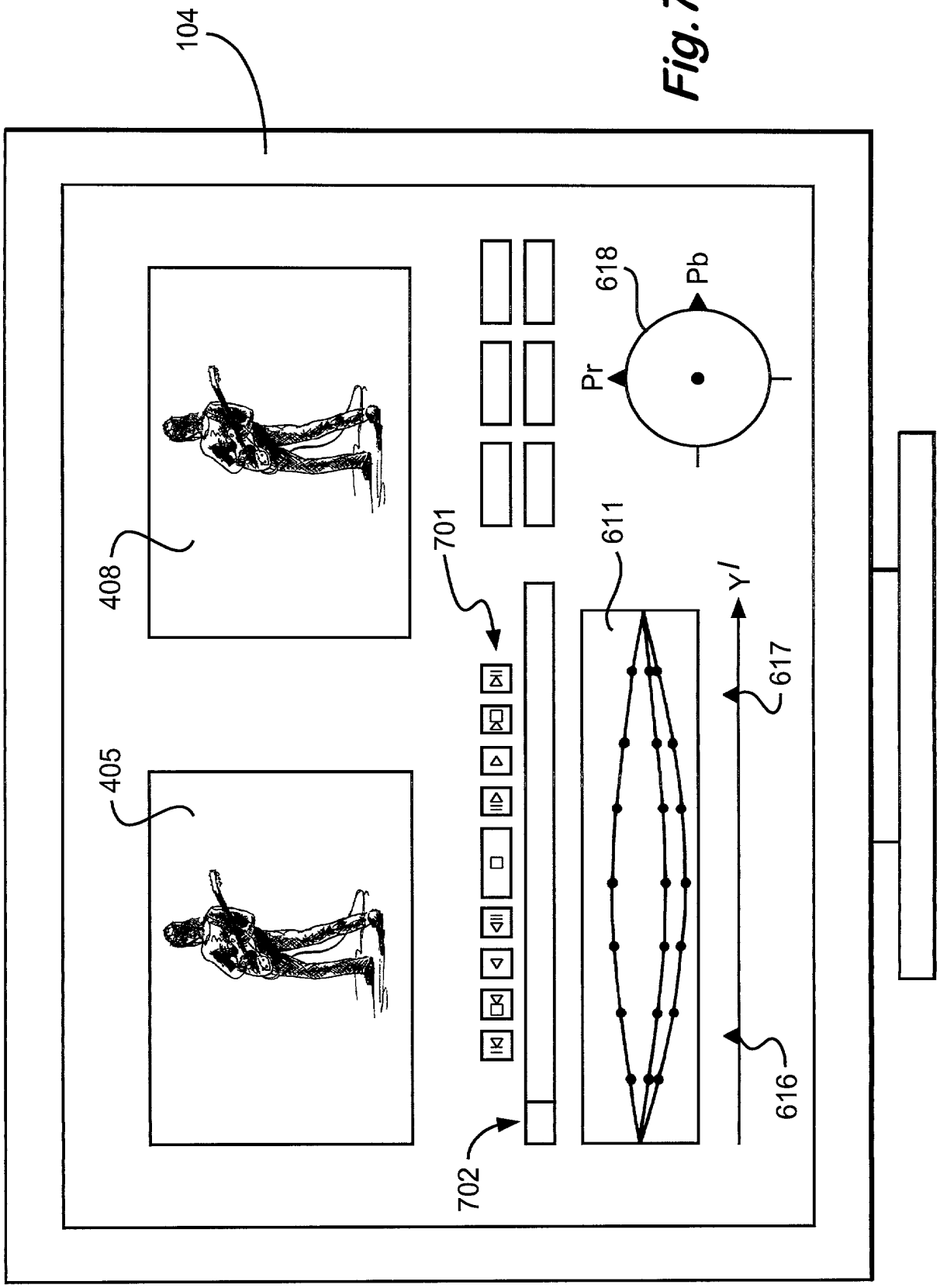

504
612
614
613
611
1.0
0.33
0
Y/
616
615
617
Pr
RED
620
P1
GREEN
BLUE
619
DEFINE COLOR VECTOR FUNCTION
601
UPDATE COLOR VECTOR LUT
602
PROCESS SOURCE IMAGE
603
DISPLAY OUTPUT IMAGE
604

*Fig.6*

Fig. 7



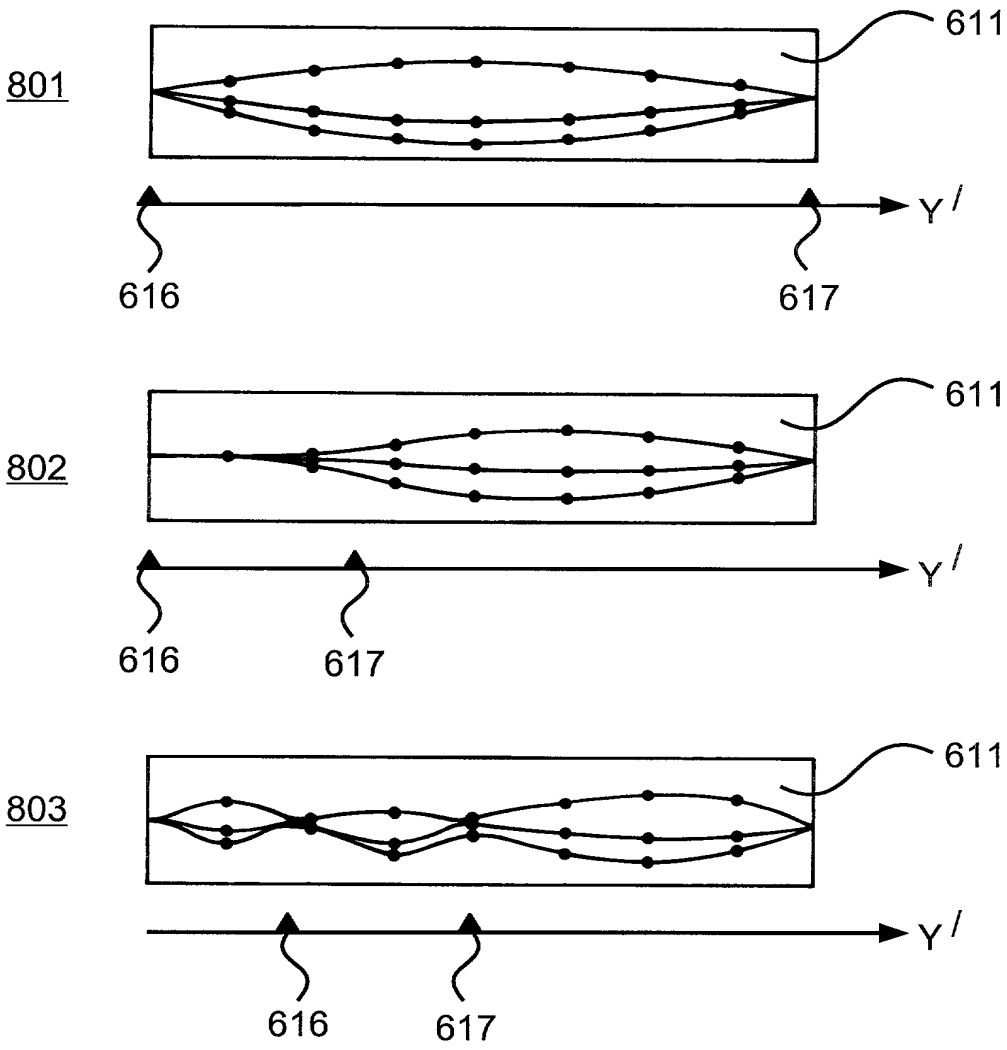



*Fig.8*

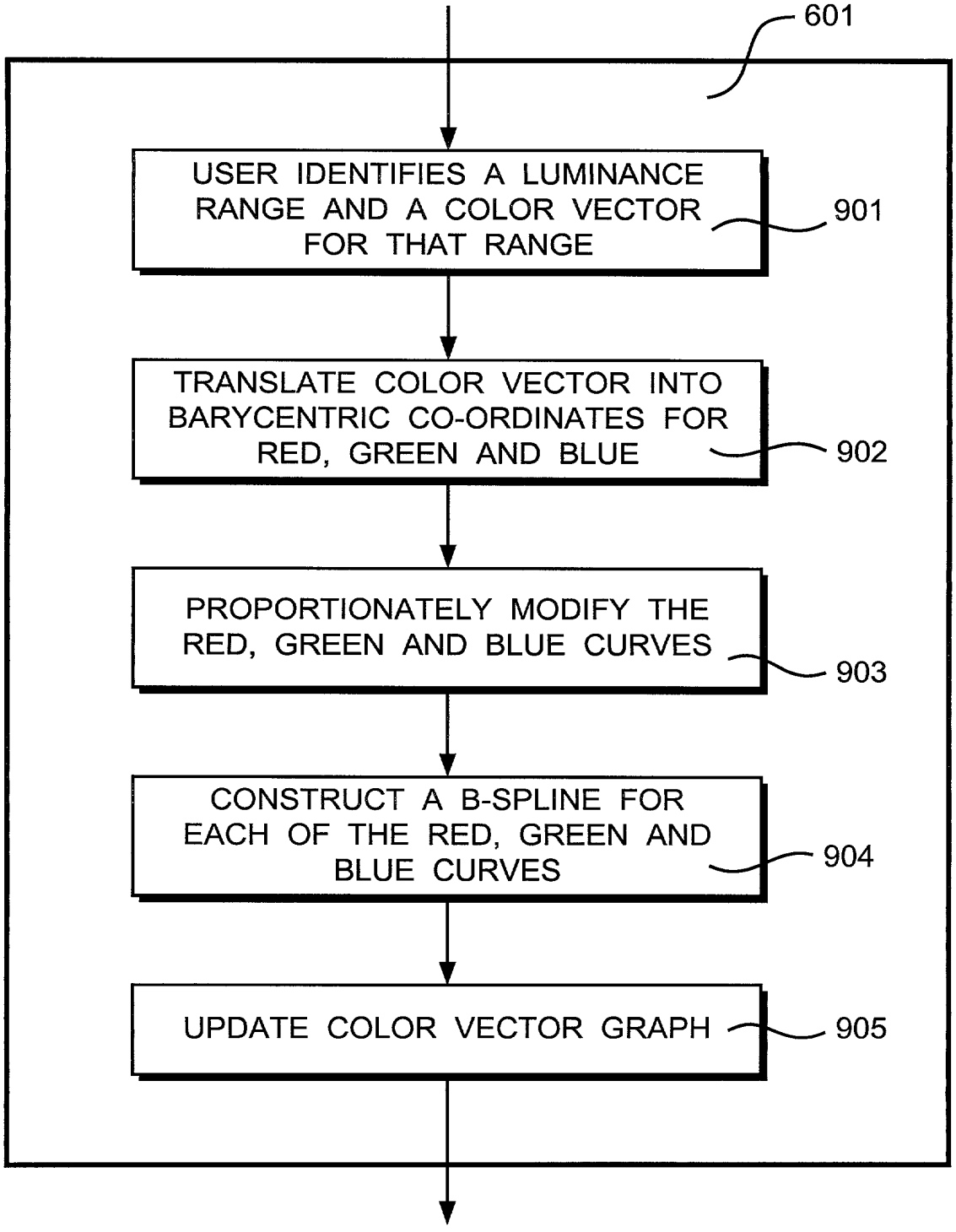

601
USER IDENTIFIES A LUMINANCE RANGE AND A COLOR VECTOR FOR THAT RANGE
901
TRANSLATE COLOR VECTOR INTO BARYCENTRIC CO-ORDINATES FOR RED, GREEN AND BLUE
902
PROPORTIONATELY MODIFY THE RED, GREEN AND BLUE CURVES
903
CONSTRUCT A B-SPLINE FOR EACH OF THE RED, GREEN AND BLUE CURVES
904
UPDATE COLOR VECTOR GRAPH
905

*Fig.9*

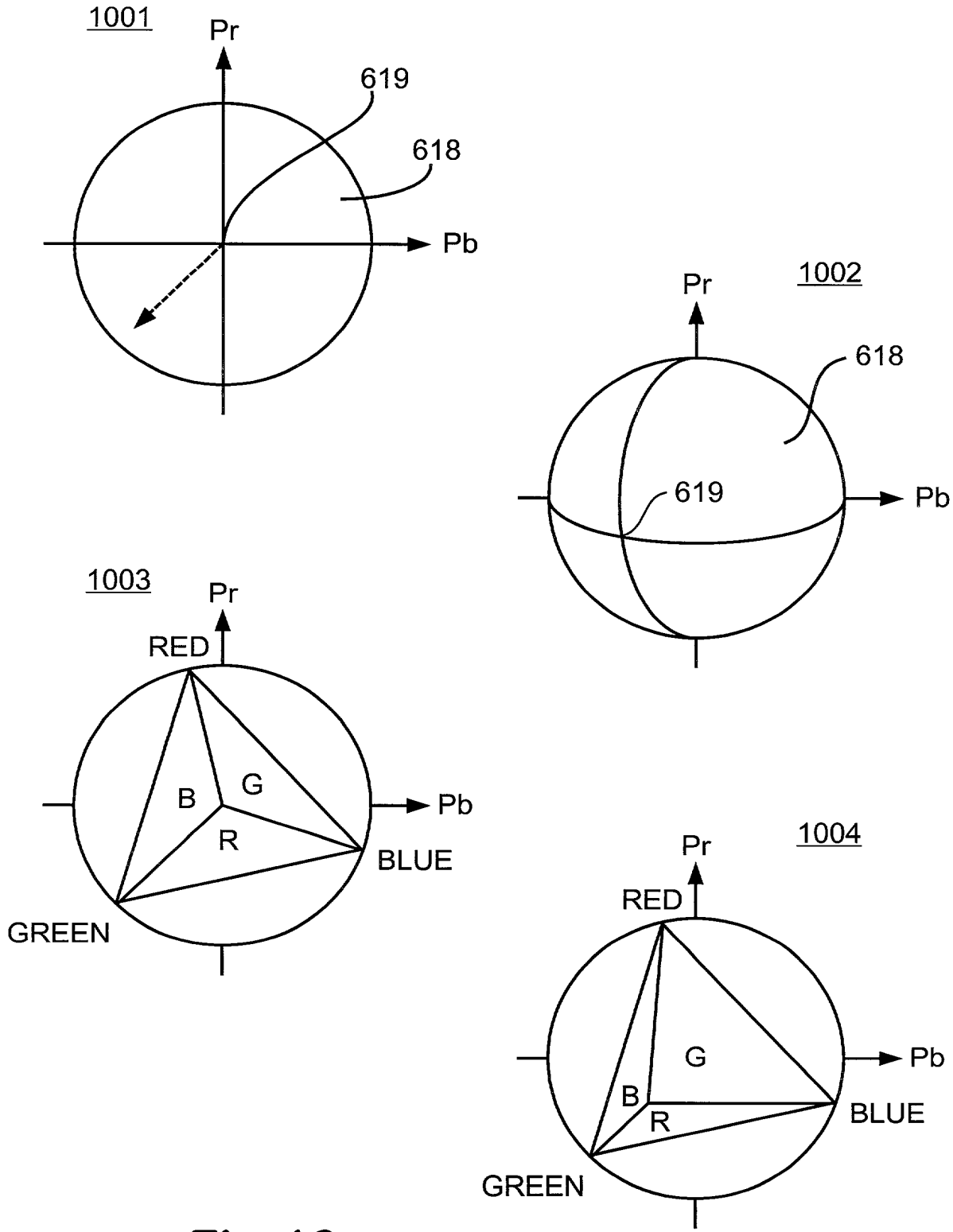

1001
Pr
619
618
Pb
1002
Pr
618
619
Pb
1003
Pr
RED
B
G
R
Pb
BLUE
GREEN
1004
Pr
RED
G
Pb
B
R
BLUE
GREEN

Fig.10

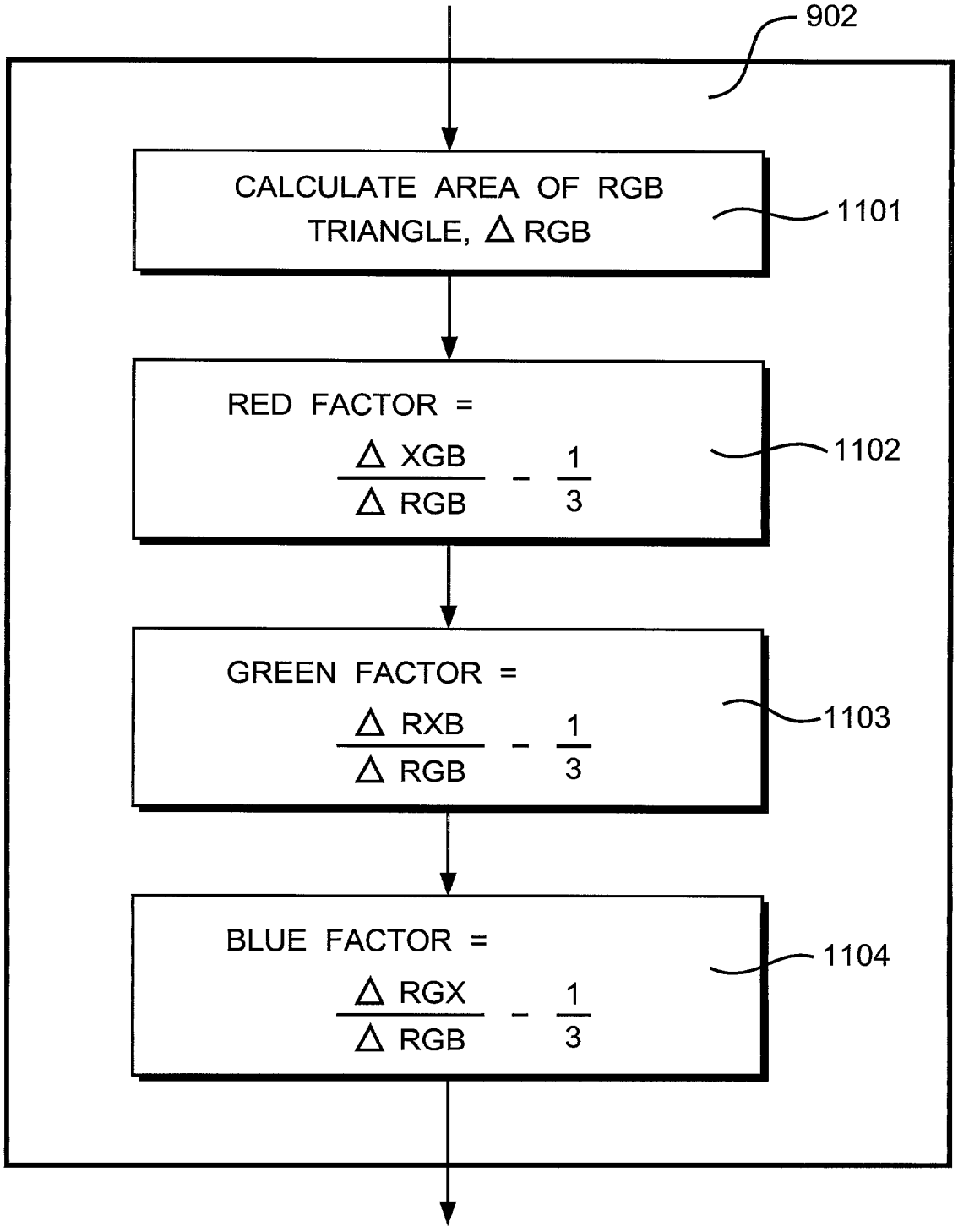

902
CALCULATE AREA OF RGB TRIANGLE, Δ RGB
1101
RED FACTOR = Δ XGB / Δ RGB − 1/3
1102
GREEN FACTOR = Δ RXB / Δ RGB − 1/3
1103
BLUE FACTOR = Δ RGX / Δ RGB − 1/3
1104

*Fig.11*

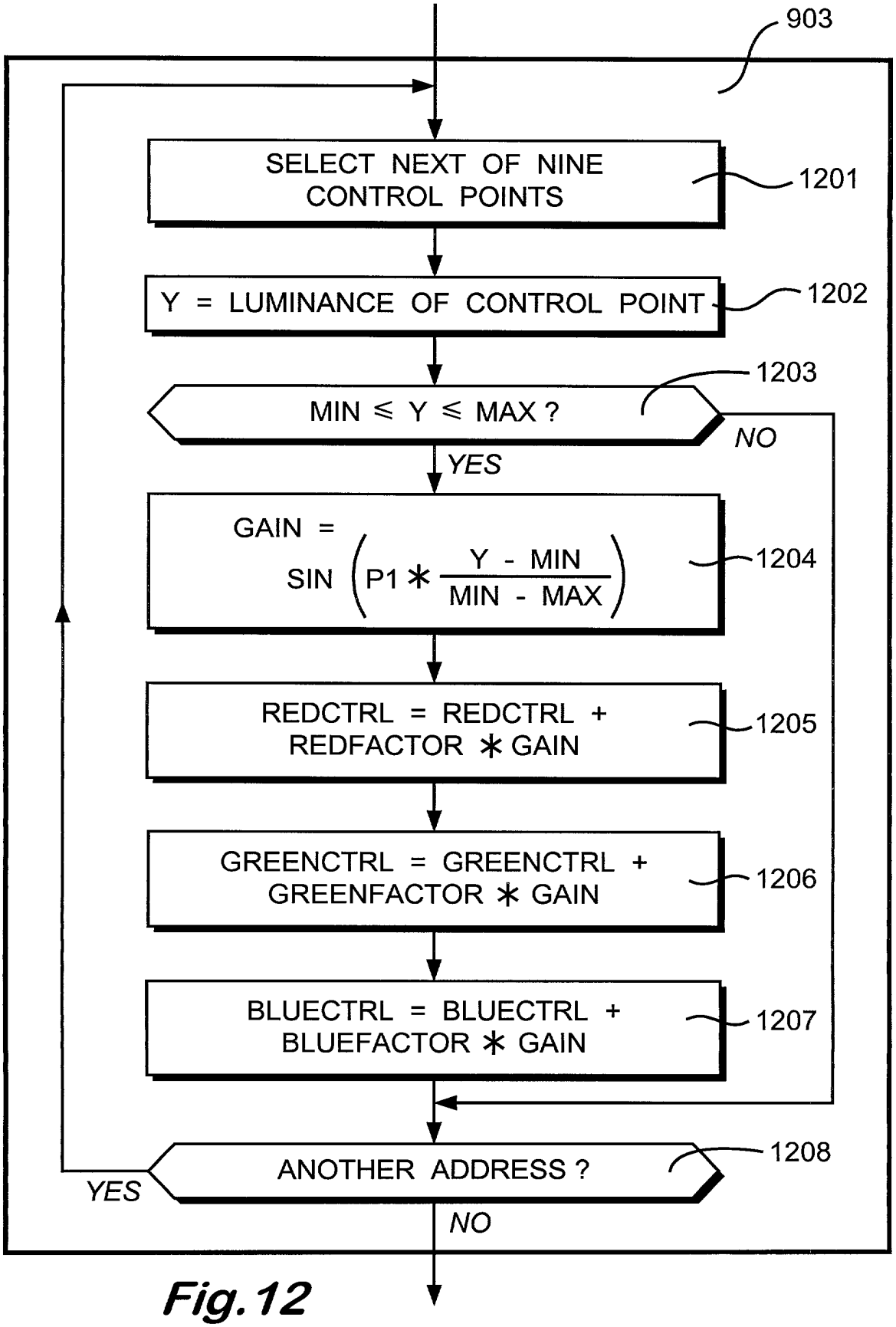

903
SELECT NEXT OF NINE CONTROL POINTS
1201
Y = LUMINANCE OF CONTROL POINT
1202
MIN ≤ Y ≤ MAX ?
1203
NO
YES
GAIN = SIN (P1 * (Y - MIN) / (MIN - MAX))
1204
REDCTRL = REDCTRL + REDFACTOR * GAIN
1205
GREENCTRL = GREENCTRL + GREENFACTOR * GAIN
1206
BLUECTRL = BLUECTRL + BLUEFACTOR * GAIN
1207
ANOTHER ADDRESS ?
1208
YES
NO

Fig.12

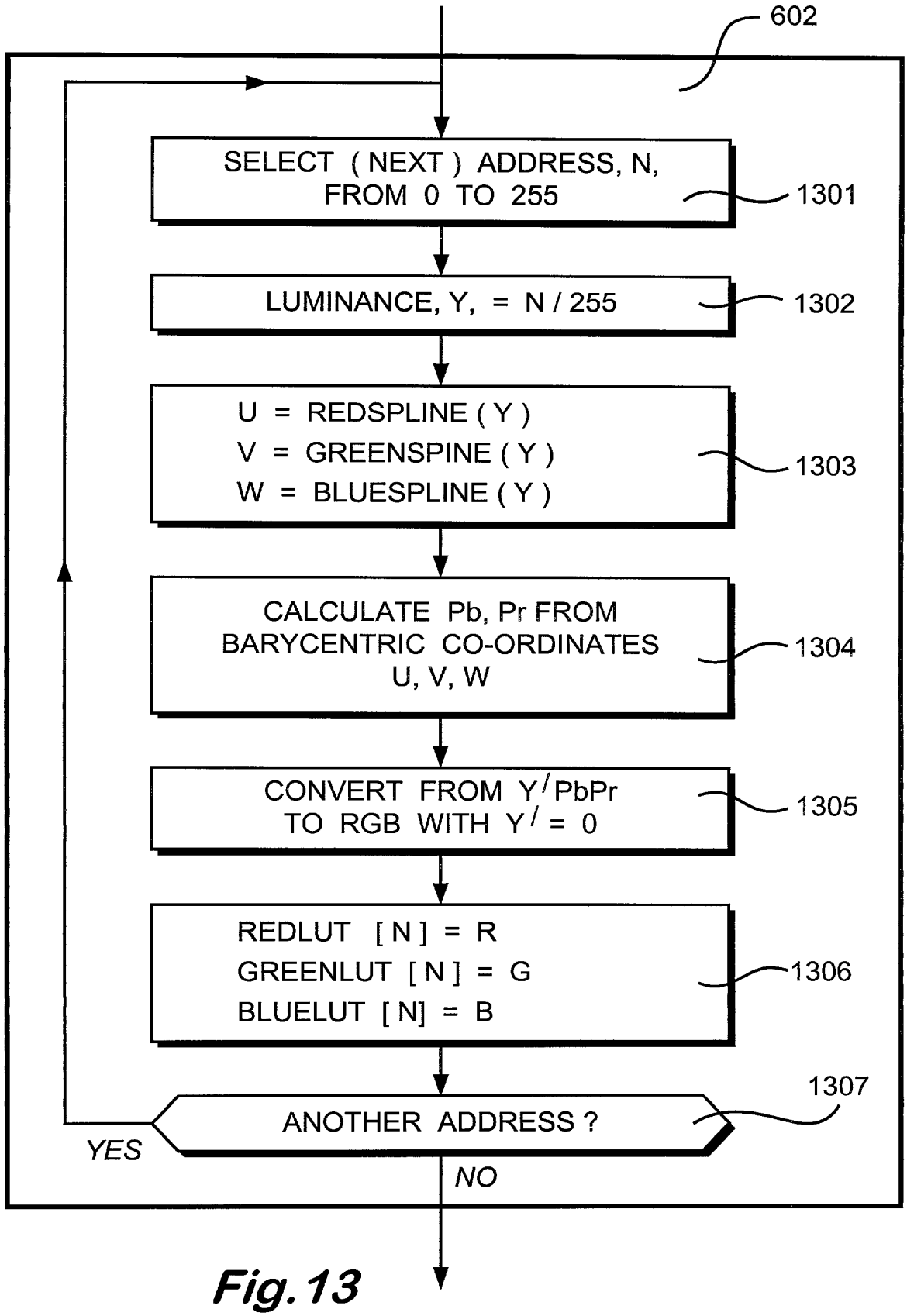
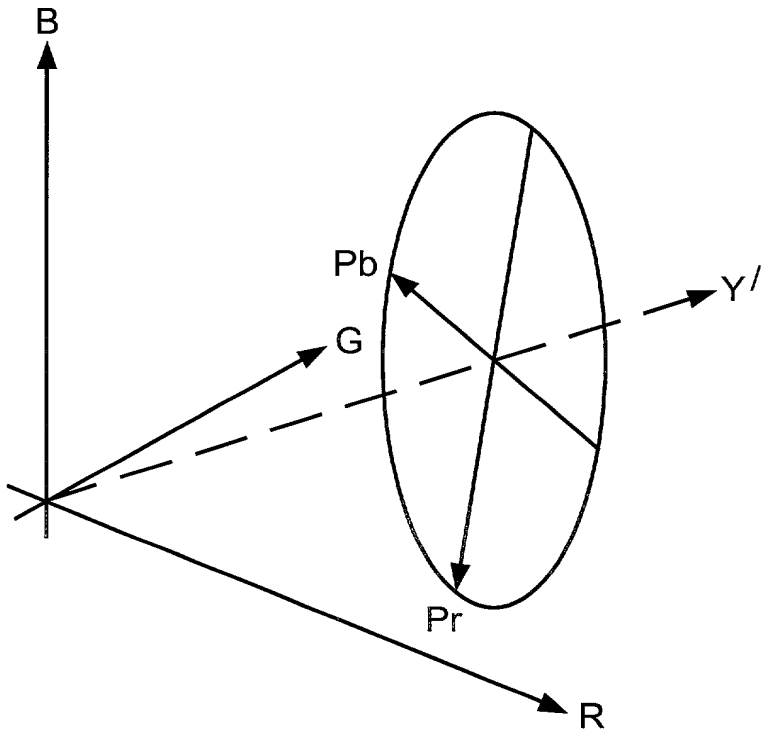

602
SELECT ( NEXT ) ADDRESS, N, FROM 0 TO 255
1301
LUMINANCE, Y, = N / 255
1302
U = REDSPLINE ( Y )
V = GREENSPINE ( Y )
W = BLUESPLINE ( Y )
1303
CALCULATE Pb, Pr FROM BARYCENTRIC CO-ORDINATES U, V, W
1304
CONVERT FROM Y/PbPr TO RGB WITH Y/ = 0
1305
REDLUT [ N ] = R
GREENLUT [ N ] = G
BLUELUT [ N] = B
1306
ANOTHER ADDRESS ?
1307
YES
NO

Fig. 13




1401

$Y^{/}$ = 0.299N R + 0.587 G + 0.114 B
Pb = - 0.169 R - 0.331 G + 0.5 B
Pr = 0.5 R - 0.419 G - 0.081 B

1402

MATRIX 'A' TRANSFORMS RGB TO $Y^{/}$ Pb Pr

MATRIX '$A^{-1}$' TRANSFORMS $Y^{/}$ Pb Pr TO RGB

RGB BLACK = ( 0, 0, 0 ); $Y^{/}$ Pb Pr BLACK = ( 0, 0, 0 )
RGB WHITE = ( 1, 1, 1 ); $Y^{/}$ Pb Pr WHITE = ( 1, 0, 0 )

*Fig. 14*

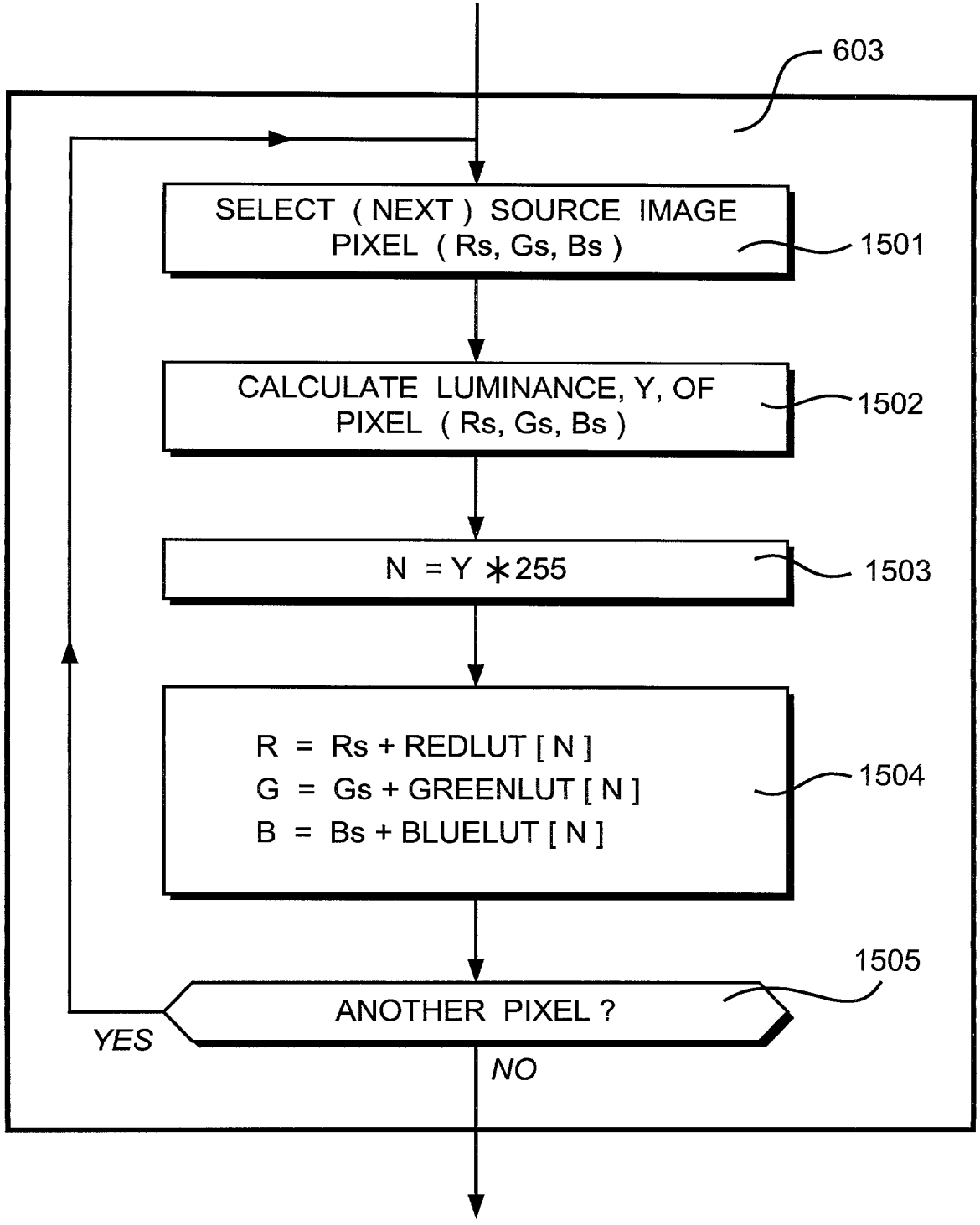

603
SELECT ( NEXT ) SOURCE IMAGE PIXEL ( Rs, Gs, Bs )
1501
CALCULATE LUMINANCE, Y, OF PIXEL ( Rs, Gs, Bs )
1502
N = Y * 255
1503
R = Rs + REDLUT [ N ]
G = Gs + GREENLUT [ N ]
B = Bs + BLUELUT [ N ]
1504
1505
ANOTHER PIXEL ?
YES
NO

*Fig.15*